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EXAMINER	
KILPATRICK, BRYAN T	
ART UNIT	PAPER NUMBER
1797	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/590,929	WANG, ZHEN	
	Examiner	Art Unit	
	BRYAN T. KILPATRICK	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 April 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☒ Claim(s) *1-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The arguments/remarks filed on 19 April 2010 have been entered and fully considered.

2. The examiner acknowledges the error that instant claims 5-9 were not previously rejected in the previous Office Action, Final Rejection, mailed 19 January 2010. Therefore, the current Final Rejection replaces the final of 19 January 2010 and includes a rejection of instant claims 5-9, which should not be treated as allowed claims as stated by Applicant in the arguments/remarks filed on 19 April 2010.

3. Instant claims 1-19 are pending currently.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 17-18 are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent 4,969,408 (Archer et al.).

In regards to instant claims 1-2, Archer et al. discloses a system for monitoring combustion of coal in a boiler (Abstract). The system determines air/fuel mixture for burning coal in a boiler (Abstract); the system determines characteristics of the fuel by continuously analyzing fuel using a bulk material analyzer for coal to determine compositions and heating values for coal and ash (col. 1, lines 53-56). A boiler model is used for predicting operating conditions (Abstract). Further, Archer et al. recites in claims 7-8 a method of using a computer to monitor combustion of coal to heat a boiler comprised of steps of a) analyzing samples of coal to determine coal composition; b) calculating a heating value of the coal; c) determining desired operating conditions; d) measuring steam flow, temperature and pressure in the boiler, air and coal supply rates, wall and surface temperatures of the boiler and oxygen concentration in the stack gases; e) modeling boiler performance in dependence upon the steam flow, temperature and pressure, the air and coal supply rates, the coal composition and the heating value of the coal to predict heat loss in the stack gases; and f) determining an air /fuel mixture capable of maintaining the desired operating conditions.

In regards to instant claim 17, Archer et al. recites in claims 7-8 a method of using a computer to monitor combustion of coal to heat a boiler comprised of several steps (see rejection of instant claims 1-2). Archer et al. recites in claims 9-11 a system for monitoring combustion of coal in a boiler comprising a bulk material analyzer,

measurement means for measuring several criteria, input means for inputting periodic measurements, and a processing means for modeling boiler performance.

In regards to instant claim 18, Archer et al. discloses a coal-fired boiler having a pulverizer in col. 2, lines 26-28.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.,* 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 3-16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 4,969,408 (Archer et al.) as applied to claim 1 above.

In regards to instant claim 3, the composition of atmospheric air is well known in the art. Archer et al. discloses that slagging is prevented by controlling temperature and the air/fuel mixture (Abstract). Coal composition analysis is disclosed in col. 2, lines 47-

50. The modeling of boiler performance that is dependent on coal composition and heating value of the coal is disclosed in col. 1, lines 58-61. Col. 4, lines 55-65 discloses a relationship between pulverizers and air/fuel mixture, which has a relationship to heating values for coal and ash. Col. 2, lines 54-58 discloses the use of a bulk material analyzer for analyzing elemental composition and moisture content of materials. A boiler model is used for predicting operating conditions (Abstract). Archer et al. recites in claims 7-8 a method of using a computer for monitoring combustion of coal to heat a boiler comprised of steps of a) analyzing samples of coal to determine coal composition; b) calculating a heating value of the coal; c) determining desired operating conditions; d) measuring steam flow, temperature and pressure in the boiler, air and coal supply rates, wall and surface temperatures of the boiler and oxygen concentration in the stack gases; e) modeling boiler performance in dependence upon the steam flow, temperature and pressure, the air and coal supply rates, the coal composition and the heating value of the coal to predict heat loss in the stack gases; and f) determining an air /fuel mixture capable of maintaining the desired operating conditions.

Archer et al. does not expressly disclose the elemental content recited in instant claim 3. However, it would have been obvious to the operator of the bulk material analyzer (col. 2, lines 54-58) to observe the elemental content as recited since it is expressly stated that the analyzer of Archer et al. is capable of measuring elemental composition and moisture content of materials (col. 2, lines 54-55).

In regards to instant claim 4, Archer et al. discloses the use of boiler model for predicting operating conditions (Abstract). Col. 2, lines 54-58 discloses the use of a bulk material analyzer for analyzing elemental composition and moisture content of materials.

In regards to instant claims 5-6, Archer et al. discloses a system that determines characteristics of fuel by continuously analyzing fuel using a bulk material analyzer for coal to determine compositions and heating values for coal and ash (col. 1, lines 53-56), and the use of a boiler model for predicting operating conditions (Abstract). Archer et al. discloses processing data in a processing unit (col. 4, lines 9-10; and claims 9-11), which correlates measurements using statistics – it is well known that equation sets are employed for statistical analysis (Fig. 5; and col. 4, lines 9-20). Col. 2, lines 54-58 discloses the use of a bulk material analyzer for analyzing elemental composition and moisture content of materials.

In regards to instant claims 7-9, Archer et al. discloses a system that determines characteristics of fuel by continuously analyzing fuel using a bulk material analyzer for coal to determine compositions and heating values for coal and ash (col. 1, lines 53-56), and the use of a boiler model for predicting operating conditions (Abstract). Archer et al. further discloses processing data in a processing unit (col. 4, lines 9-10; and claims 9-11), which correlates measurements using statistics – it is well known that equation sets are employed for statistical analysis (Fig. 5; and col. 4, lines 9-20).

In regards to instant claim 10, Archer et al. discloses the use of boiler model for predicting operating conditions (Abstract). Coal composition analysis is disclosed in col. 2, lines 47-50.

In regards to instant claims 11-14 and 19, Archer et al. recites in claims 7-8 a method of using a computer for monitoring combustion of coal to heat a boiler comprised of steps of a) analyzing samples of coal to determine coal composition; b) calculating a heating value of the coal; c) determining desired operating conditions; d) measuring steam flow, temperature and pressure in the boiler, air and coal supply rates, wall and surface temperatures of the boiler and oxygen concentration in the stack gases; e) modeling boiler performance in dependence upon the steam flow, temperature and pressure, the air and coal supply rates, the coal composition and the heating value of the coal to predict heat loss in the stack gases; and f) determining an air /fuel mixture capable of maintaining the desired operating conditions. Archer et al. discloses the use of boiler model for predicting operating conditions (Abstract). Coal composition analysis is disclosed in col. 2, lines 47-50. Col. 2, lines 54-58 discloses the use of a bulk material analyzer for analyzing elemental composition and moisture content of materials.

In regards to instant claims 15-16, Archer et al. discloses a method of monitoring combustion of fuel using a computer for meeting operational criteria (col. 1, lines 42-47) and a system for monitoring combustion of coal in a boiler (Abstract). Archer et al. does not disclose the use of fossil fuel gas or fossil fuel oil as combustibles. However, it would have been obvious to one of ordinary skill in the art at the time the invention was

made to use gas or oil as combustible fuels since they are combustible fossil fuels like coal.

Response to Arguments

Applicant's arguments with respect to claims 5-9 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed 19 April 2010 regarding claims 1-4 and 10-19 have been fully considered but are not persuasive.

Applicant states on p. 2-4 of the remarks in regards to instant claims 1-4, 10-16, and 19 that Archer et al. does not provide a "suggestion of using an equation set for mathematical modeling, or using measured operating data and stored independent relationships to solve an equation set to determine fuel compositions." Archer et al. discloses a system that determines characteristics of fuel by continuously analyzing fuel using a bulk material analyzer for coal to determine compositions and heating values for coal and ash (col. 1, lines 53-56), and the use of a boiler model for predicting operating conditions (Abstract). Archer et al. recites in claims 9-11 a system for monitoring combustion of coal in a boiler comprising a bulk material analyzer, measurement means for measuring several criteria, input means for inputting periodic measurements, and a processing means for modeling boiler performance. Archer et al. discloses processing data in a processing unit (col. 4, lines 9-10; and claims 9-11), which correlates measurements using statistics – it is well known that equation sets are employed for

statistical analysis (Fig. 5; and col. 4, lines 9-20), and that data processing units are more than capable of storing inputted data, such as periodic measurements (claims 9-11), for analysis.

Applicant states on p. 4-5 of the remarks in regards to instant claim 3 that "... claim 3 recites steps of setting certain variables to zero. Archer has no need to carry out this step, because Archer is not solving an equation set." As stated previously, Archer et al. discloses processing data in a processing unit (col. 4, lines 9-10; and claims 9-11), which correlates measurements using statistics – it is well known that equation sets are employed for statistical analysis (Fig. 5; and col. 4, lines 9-20), and that data processing units are more than capable of storing inputted data, such as periodic measurements (claims 9-11), for analysis. Furthermore, it would be obvious to the operator of the data processing unit to have zero values for some variables that represent initial or beginning values of measurements used for making correlations (Fig. 5; and col. 4, lines 9-20).

Applicant states on p. 5-6 in regards to instant claims 17-18 that "Unlike the device defined in claim 17, Archer's device does not store or solve an equation set..." As previously stated above, Archer et al. recites in claims 9-11 a system for monitoring combustion of coal in a boiler comprising a bulk material analyzer, measurement means for measuring several criteria, input means for inputting periodic measurements, and a processing means for modeling boiler performance. Archer et al. discloses processing data in a processing unit (col. 4, lines 9-10; and claims 9-11), which correlates measurements using statistics – it is well known that equation sets are employed for

statistical analysis (Fig. 5; and col. 4, lines 9-20), and that data processing units are more than capable of storing inputted data, such as periodic measurements (claims 9-11), for analysis.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRYAN T. KILPATRICK whose telephone number is (571)270-5553. The examiner can normally be reached on Monday - Friday, 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. T. K./
Examiner, Art Unit 1797

/Jill Warden/
Supervisory Patent Examiner, Art Unit 1797